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Recommendation for funding from other resources without a recommendation for funding from regular resources**

Micronutrient programme for the Andean subregion and Paraguay

Summary

The present document contains a recommendation for funding from other resources for which no recommendation for funding from regular resources is requested for the multi-country micronutrient programme of Bolivia, Colombia, Ecuador, Paraguay, Peru and Venezuela. The programme proposal submitted here is aimed at expanding or complementing an ongoing programme. The Executive Director *recommends* that the Executive Board approve funding from other resources in the amount of $4,000,000, subject to the availability of specific-purpose contributions, for the period 2002 to 2006.

* E/ICEF/2001/12.

** The figures provided in the present document are final and take into account unspent balances of programme cooperation at the end of 2000. They will be contained in the summary of recommendations for regular resources and other resources programmes for 2001 (E/ICEF/2001/P/L.73).

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The situation of children and women

1. According to the Pan American Health Organization/World Health Organization (PAHO/WHO), micronutrient deficiencies affect approximately 40 per cent of the total population of the Latin American region, including 30 million people with iodine deficiency and 95 million with iron deficiency. By 2000, all five Andean countries (Bolivia, Colombia, Ecuador, Peru and Venezuela) had achieved the World Summit for Children goal of virtually eliminating iodine deficiency disorders (IDD) as a public health problem. Maintaining quality assurance of iodized salt production and use, and sustaining IDD elimination, require continuous and careful monitoring and control of the processes, as IDD incidence can easily increase if the system becomes lax and effective monitoring is reduced. This is seen in the case of Bolivia, where iodization level of salt decreased from 90 per cent in 1996 to 33 per cent in 1998, with a partial recovery to 66 per cent in 2001.

2. In Paraguay, IDD are an endemic problem. Due to the absence of any domestic sources of salt, Paraguay imports 100 per cent of its salt needs from Argentina, Brazil and Chile. However, as it is imported in the form of raw salt, the levels of iodization of the salt are not sufficient to reach the level needed in the country. In 1988, a national survey showed that 48.6 per cent of the population presented at least one disorder caused by iodine deficiency. In 1994, the Government of Paraguay mandated that all salt for human and animal consumption must be iodized. Despite the complexity of monitoring a complicated import and retailing sales chain, iodized salt consumption increased from 65 per cent in 1995 to 82.6 per cent in 2000. A Presidential Declaration established 2001 as the year to achieve the virtual elimination of IDD.

3. According to the national statistics presented by the five Andean countries at the 2000 annual programme review, anaemia affects between 40-60 per cent of pregnant women, and up to 70 per cent of children under two years old. Iron deficiency control has not improved much in the last five years in the Andean subregion and Paraguay. National statistics show anaemia prevalence of 75.8 per cent among children 6 to 11 months old in Bolivia (1998), 36.7 per cent in children aged 12 to 23 months in Colombia (1995), 65 per cent in Ecuador (1997), 78.6 per cent in Peru (1996) and 52 per cent among children 6 to 36 months old in Venezuela (1997). Among pregnant women, 60 per cent showed deficiencies in iron in Ecuador in 1997, 33.7 per cent in Paraguay in 1994 and 40.9 per cent in Venezuela in 1997. Iron deficiency control is more complicated than IDD control due to the dispersal of the problem throughout the entire population versus the geographic concentrations of IDD, as well as insufficient surveillance methods for identifying and localizing the problem. Legislation on food fortification with iron has not yet been approved in any of the five countries in the Andean subregion.

4. With standards of vitamin A deficiency of less than 10 per cent as low and between 10 to 20 per cent as moderate, the levels in the Andean subregion are not high. Perhaps due to the easy access and abundant availability of food enriched with vitamin A, the situation of vitamin A deficiency in Bolivia, Colombia and Ecuador is only low to moderate among children under three years old. According to the Ministry of Public Health in Bolivia, the prevalence of vitamin A deficiency among children 12-71 months old was 11.3 per cent in 1991; while it was 14.8 per cent among infants 12-23 months old in Colombia in 1996 and 17.4 per cent among the same age group in Ecuador in 1995. In Peru, the figure is the worst among the five

countries, showing vitamin A deficiency levels of 37 per cent among children under five years old.

5. The national Governments of all six countries are committed to continue the subregional micronutrient programme, enabling them to sustain the achievement of the World Summit for Children goal to eliminate IDD. The commitments shown by the Andean subregion and Paraguayan Governments on the importance of micronutrient interventions should be supported, especially now that the countries are beginning to show positive results in controlling iron and vitamin A deficiency. It is fundamental to continue the micronutrient programme in the six countries, considering the damaging effects on the mental and intellectual development, and healthy physical growth of children who face such deficiencies.

6. The current economic crisis in some of the countries could affect the efforts and political commitment made by the Governments to achieve the goal of eliminating iron and vitamin A deficiencies, as the programme is still not self-sustained. All of the countries have a legal framework that supports the elimination of IDD, and iron and vitamin A deficiencies, but financial needs in almost all the countries have yet to be addressed. An extension of the micronutrient programme is required in order to consolidate its four components, placing greater emphasis on quality assurance of the processes and required coverage.

Programme cooperation, 1995-2001

7. The previous multi-country micronutrient programme for the five Andean countries was initiated with funding provided by the Government of Belgium. The programme addressed the problems of iodine, iron and vitamin A deficiencies. Paraguay joined the programme in 1997.

8. During this period of cooperation, the programme advocated with the salt industry to obtain their commitments to universal salt iodization (USI) in the five countries, and provided advice on iodization technology and the training of health professionals and salt industry personnel on the benefits of iodized salt consumption. The continuous participation of salt industries in the annual progress review meetings and their commitment to the programme were recognized by the external evaluations that took place during 1996-1999 to certify IDD control in the five Andean countries. At the "Salt 1999" meeting held in Colombia at the end of 1999, all five Governments and salt industries participating in the meeting committed themselves to this goal and to develop a sustainability plan to eliminate IDD.

9. The programme supported the epidemiological surveillance of IDD, especially in relation to standardizing methods and materials used in the control laboratories. As quality assurance is a key element to a successful IDD elimination programme, special emphasis was placed on the process of inter-laboratory testing of iodine presence in salt and urine, serving as control for assuring the quality of the products and reported information. Through the annual subregional laboratories meetings, a laboratory network of the subregion was established, which is now composed of 69 laboratories from the five countries and Paraguay. The network now serves as a reference centre for technical assistance and information exchange among the laboratories.

10. Information, education and communication (IEC) activities promoting demand creation for and production of iodized salt, as well as sustained political commitment to the elimination of IDD and other micronutrient deficiencies, played a key role in this endeavour. IEC efforts focused principally on high-risk mountain zones in the five countries. Mass communication, basically radio and television, was used, together with interpersonal promotion efforts, by the health sector personnel. The educational and developmental communication activities supported the increase in the level of consumption of iodized salt in the population of all five countries through the promotion of the catch phrase: "*Sal yodada, la sal de la vida*" ("Iodized Salt, Salt for Life").

11. In Paraguay, the programme focused its efforts to guarantee the accessibility of adequately iodized salt in high-risk rural high altitude zones. IEC efforts disseminated knowledge of the importance of consuming iodized salt in those areas, as well as to areas with a heavy consumption of raw salt such as San Pedro, where little commitment is shown to overcoming iodine deficiency.

12. As mentioned earlier, the five countries of the subregion have reached the World Summit for Children goal of the virtual elimination of IDD. Credit for this progress goes to the supporting efforts of national Governments, salt producers and UNICEF through the multi-country subregional micronutrient programme, PAHO/WHO, Kiwanis International, the Micronutrient Initiative of Canada and donor Governments. Bolivia was the first country to be certified as having virtually eliminated IDD as a public health problem in 1996. Colombia and Peru followed in 1998, and Ecuador and Venezuela in 1999. The production of iodized salt for human consumption in Ecuador rose from 90 to 95 per cent between 1990 and 2000, and from 35 to 95 per cent in Peru between 1992 and 1999. In 1999, 73.9 per cent of salt produced in Colombia was iodized, and in Venezuela, 90 per cent. The accessibility of iodized salt in Paraguayan stores rose from 43 per cent in 1995 to 85 per cent in 2000. The consumption of iodized salt in Peru rose from 61 per cent in 1994 to 96 per cent in 1999, while in Paraguay, the figure rose from 65 per cent in 1995 to 82.6 per cent in 1999. In Venezuela, the consumption of iodized salt stood at 94 per cent in 1999, and at 78.3 per cent in Colombia in 2000. The elimination of IDD as a public health problem was extremely cost-effective since studies show the Andean region per capita salt iodization cost is between $0.02 and $0.08 per year.

13. Although the problem is still serious, the countries made significant progress to address iron deficiency. All five Andean countries and Paraguay now fortify wheat flour with iron, owing to advocacy and technical support provided by the programme. In addition, Venezuela also fortifies the corn flour largely consumed in the country. The five countries have a legal framework that supports the fortification process and defines the processing procedures and quantity of iron to be added. In addition, health ministry personnel were trained in monitoring the quality control of wheat flour. Special IEC activities to promote the importance of consuming food rich with micronutrients were undertaken, and important mass media support for free broadcasting of micronutrient messages was obtained.

14. In a complementary strategy, iron supplements were provided to pregnant women and young children in the rural and marginalized urban zones in the five countries and Paraguay. Alliances were created with local non-governmental organizations (NGOs) and church groups to raise supplementation coverage by distributing iron supplements utilizing their health networks and distribution

systems and by disseminating important information on micronutrient deficiencies and how to overcome them. However, the high cost of supplementation and problems in the distribution system resulted in low coverage. There was also cultural resistance, with iron tablets seen as "medicine" that could create harm and cause unborn infants to gain weight. This issue is being addressed through IEC activities, raising awareness of the benefits of iron consumption and the negative impact on the health status of the population, especially women and children.

15. In the vitamin A deficiency control component, vitamin A supplements were distributed at health centres through routine immunization sessions in Ecuador, Peru and Venezuela. In Bolivia, supplementation was covered by the basic health insurance system, which facilitated widespread access to vitamin A supplements for women and children in need. Supplementation activities were accompanied by radio promotion and the distribution of pamphlets, and significant progress was made. Bolivia increased its supplementation coverage from 35 to 52 per cent among all pregnant women, and from 35 to 66 per cent between 1996 and 1999 in children from six months to five years olds. Colombia did not provide vitamin A supplementation since they decreed to fortify sugar with vitamin A in 1998. However, the law was not accepted by the sugar industry and was revoked in 2000. Ecuador's vitamin A supplementation coverage increased from 60 to 93.8 per cent in children from 12 to 36 months old among the 530 extremely poor, rural and marginalized urban communities in the country. The situation of vitamin A deficiency in Venezuela is unclear, and studies have been initiated to measure the magnitude of the problem and identify target areas.

16. The more general fortification strategy had less success. Although Bolivia fortified oil and Venezuela corn flour with vitamin A, sugar fortification was not realized due to high costs in the fortification process that led to rejection by the sugar industry. This occurred despite intense advocacy efforts to obtain sugar industry support. A related reason was also the weakness of the IEC component in promoting the consumption of vitamin A-rich foods. This issue will be addressed in the proposed programme.

Lessons learned from past cooperation

17. Several positive lessons were learned during the programme cycle. At the managerial level, the programme proved that the four components could be developed simultaneously in one process. Supplementation for high-risk groups, food fortification, epidemiological surveillance and IEC actions were implemented together due to strong political commitment. The subregional coordination of the programme was successful despite the inherent difficulties in working across national boundaries. Through this subregional coordination, experiences and technical assistance were shared at annual review meetings, which proved useful for all countries involved; donor contacts and resource mobilization were unified from one channel; and quality control of salt iodization was standardized in each country's laboratories. Due to the strong government interest and commitment to achieve the World Summit goal of eliminating IDD, it was possible to build alliances with other key partners in this endeavour, and also in supporting the elimination of other micronutrients deficiencies. These key allies included: private salt and wheat producers; national and local governments; local NGOs; the education sector; the mass media; international agencies; and NGOs. At a technical

level, the food fortification strategy was validated. It is cost-effective, while guaranteeing mass consumption if the correct commodities are fortified. Fortification must be linked to a monitoring plan from the initial stage for quality control and to permit effective adjustments.

18. Some negative lessons also surfaced. A multi-country programme will advance unevenly when institutional weaknesses and political instability lead to the discontinuous provision by Governments of needed human and financial resources. Programmatically and managerially, programme monitoring and evaluation are difficult to carry out when there are inconsistencies in data and insufficient updating of vitamin A and iron deficiency indicators, such as the level of micronutrient deficiencies; the consumption quantity per capita of food to be fortified; and the level of bio-availability of the micronutrient in the diet. The first step to be made in the next cooperation programme is to conduct research to update data to define measurable objectives. The fortification strategy, while successful, is complex and must be carefully managed to balance concerns of a technical, cost and social acceptability nature. The micronutrient to be used must be compatible with the food so as not to influence its smell, taste and appearance. Cost issues, as shown by the sugar industry, can lead to producer rejection even when technical feasibility and social acceptance exist. Iron presents a different problem. Since there is not one food source whose fortification can reach the mass consumption level needed, alternative foods must be identified. Supplementation as a substitute or complement to fortification was also difficult at times, as in the case of iron, owing to cost and cultural resistance.

Recommended programme cooperation, 2002-2006

	Estimated annual expenditure (In thousands of United States dollars)					
	2002	*2003*	*2004*	*2005*	*2006*	*Total*
Other resources						
Food fortification	70	70	70	70	70	350
Supplementation	100	130	170	155	145	700
Information, education and communication	150	200	150	150	150	800
Epidemiological surveillance	320	300	270	250	250	1 390
Regional coordination	155	155	150	150	150	760
Total	795	855	810	775	765	4 000

Programme goal and objectives

19. The goal of the multi-country micronutrient programme is to contribute to the efforts of the Governments of the five Andean countries and Paraguay to prevent "hidden" malnutrition in children and women due to iodine, iron and vitamin A deficiencies. Within this framework, the programme aims in particular to control and sustain the elimination of IDD; to prevent and reduce iron deficiency anaemia

among young children and women; and to eliminate vitamin A deficiency in children in extremely poor rural and urban areas in these countries.

20. In pursuance of this goal, the subregional programme aims to contribute to: (a) the consolidation and sustainability of all salt iodization processes in the six countries so that all salt producers are producing salt in accordance with standards, iodized salt is consumed at all household levels and Paraguay achieves the elimination of IDD; (b) iron supplementation to at least 80 per cent of all pregnant women and 80 per cent of infants in each country, and expansion of vitamin A supplementation coverage to at least 80 per cent of children under three years of age in high-risk areas identified in each country; (c) reaching the public-at-large with messages on micronutrients deficiencies as a major public health problem, ensuring that at least 75 per cent of families have basic knowledge of the importance of the consumption of vital micronutrients; and (d) the effectiveness of epidemiological surveillance systems and the quality control of food fortification by at least 80 per cent of the laboratories in the six countries. At the same time, efforts will continue to reinforce food fortification processes with iron.

Programme strategy

21. The proposed programme maintains the four major components of the previous programme.

22. **Food fortification**. The prevention of IDD through salt iodization will continue to be the main strategic emphasis. Support will be extended to consolidating the iodization process. In this regard, efforts will be made to maintain the alliance and cooperative relationships developed with the salt producers in the Andean region. Some countries need to reduce the costs of the fortifier by reducing the quantity to be added to salt or by reducing import taxes on the fortifiers. In some countries, national standards require the addition of 30 to 100 ppm of iodine, whereas international standards only require 15 ppm; and there is an international standard urinary iodine level. Further training and technical assistance will be provided to ensure that the iodized salt produced meets the quality standard to meet the needs of the population. A variety of IEC activities will be conducted aimed at creating demand for and promoting the consumption of iodized salt at the household level. In the process, the active participation of several government sectors, civic organizations, salt producers, schools, mass media, scientists and agricultural workers will be sought. Research activities will be carried out to identify the extent of IDD deficiency in schoolchildren to improve monitoring the level of iodine in salt and to sustain the elimination of IDD. The programme will also ensure that issues of packing, marketing and related needs are addressed.

23. Concerning food fortification with iron, the programme will focus on consolidating the fortification process of wheat flour in the five Andean countries and of corn flour in Venezuela. In addition, alternative food types to be fortified will be identified in all six countries since one fortified food is insufficient to obtain the needed coverage. The alternative must be of low cost and available for mass consumption. Based on the successful experience of Venezuela, efforts will be made and support provided to fortify corn flour in the other countries. Research will be carried out to explore the possibility of fortifying rice.

24. Efforts for the fortification of sugar with vitamin A will be pursued. Bolivia will continue to fortify oil. Research will be undertaken in order to assess the level of vitamin A deficiency in each country. According to the results, the programme will support each country to identify suitable food types for fortification with vitamin A.

25. **Supplementation**. This programme will focus on iron and vitamin A. Supplementation will be used as a short-term emergency measure for groups at high risk and with severe micronutrient deficiencies. High-risk areas and target groups of intervention will be defined after studies of iron and vitamin A deficiencies are undertaken in all six countries and when data are updated. Efforts to link vitamin A supplementation to immunization sessions will be strengthened in Ecuador, Peru and Venezuela, and attempts will be made to include vitamin A supplementation as part of the basic health service coverage, as in Bolivia. Colombia will identify its target area and provide supplementation to women and children prone to vitamin A deficiency.

26. **IEC**. In spite of efforts to create awareness in the past programme of iodine, iron and vitamin A deficiencies and their impact on the health situation of the population, particularly children and women, the level of awareness of micronutrient deficiencies as a priority public health problem is still low among the public in general in the countries. This underscores the need for accelerated IEC activities during the period of the programme. It is also necessary to sustain the political commitment and existing alliances, while creating new ones as a national environment of awareness and understanding of the dangers and negative effects of micronutrient deficiencies and the commitments to address these problems in each country.

27. IEC interventions will be strengthened further in their fundamental role of influencing changes in eating habits and attitudes. The central message will be the importance of diversifying the diet, with a special emphasis on the consumption of iodized salt and foods fortified with iron and vitamin A. Special emphasis will be placed on IEC to promote the consumption of iron supplements among pregnant and post-partum women and to at-risk infants. Efforts will be made to identify target audiences, e.g. political leaders, decision makers, relevant government sectors, health workers, medical professionals, teachers, parents, schoolchildren and salt producers. As an important ally, the mass media will be used for the widespread dissemination of messages, including public service airtime provided by national media within each country. Knowledge, attitudes and practices studies will be carried out to evaluate the impact of IEC activities on creating and raising awareness of micronutrient deficiencies and the importance of the consumption of iodized salt and fortified food. The programme will support the development of a social marketing strategy for iodized salt, micronutrient supplementation and potentially fortified foods.

28. **Epidemiological surveillance**. This component will continue to play a vital role in the proposed programme. Further support will be provided to consolidate monitoring systems for quality of the level of iodine in salt and biological monitoring. This will ensure the effectiveness of the iodization process and that the recommended level of iodine is always achieved for the sustained control of IDD. The new stage will start with updating the basic indicators, such as the prevalence of IDD, and iron and vitamin A deficiencies in each country in pregnant women, post-

partum women and infants. Other key indicators will include: fortified food consumption; levels of the quantity of the fortifier in the food; and the coverage of supplementation of iron and vitamin A. Epidemiological surveillance in each country will receive support for the control of iodine in salt, iodine in urine and the consumption of iodized salt during the first year of the programme. Training will be provided to laboratory staff, as well as government personnel and NGOs involved in nutrition, to analyse problems and develop, implement and monitor interventions to address micronutrient deficiencies. Updating basic information will ensure an adequate information base to allow the quantification of objectives, efficient monitoring during implementation, and baseline and impact evaluation measurements. Finally, the establishment of an electronic communication network among the laboratories will strengthen the ability to exchange data, and seek and provide assistance.

Collaboration with partners

29. Strategic alliances are key to programme success. Groups with a widespread influence in and credibility within at-risk communities are vital. Such as in the case of the Church in Ecuador, alliances with strategic groups will help to overcome cultural resistance of the kind still seen with iron supplementation. The mass media are also important allies whose skills at developing and disseminating messages and monitoring their impact will increase awareness of micronutrient deficiencies and their negative impact on the health of women and children.

30. Salt producers and other food processors are also critical allies. Existing strong links with the salt community will be maintained, and efforts will be made to redynamize contact with the sugar industry for vitamin A fortification. The programme will collaborate with critical government partners in each of the six countries, such as the ministries of health, industry, trade, agriculture and education, as well as scientific and research institutes, to ensure the application of policy measures, regulations and legislation, and the effective implementation and monitoring of the programme components.

31. UNICEF will work closely with PAHO/WHO, the International Council for the Control of IDD (ICCIDD) and the Micronutrient Initiative of Canada in the development of this programme. The iodine deficiency control project will again be evaluated by WHO/PAHO and ICCIDD. The subregional programme will continue to receive technical assistance from PAHO/WHO, the Micronutrient Initiative and members of the external evaluation for the certification of the countries for IDD control. The World Food Programme will play a major role in supporting the training and supplementation activities, as in Bolivia, especially in relation to iron deficiency. It is expected that Kiwanis International will continue to provide support to IDD elimination and sustainability.

Monitoring and evaluation

32. Coverage of national surveillance systems and available data to measure progress towards the programme objectives of the virtual elimination of IDD and vitamin A deficiency in children and, iron deficiency anaemia in pregnant women, vary widely across the Andean subregion and Paraguay.

33. However, for all of them, it is necessary to establish firm baseline indicators for medium- and long-term monitoring of IDD, and vitamin A and iron deficiency prevalence and their consequences at both national levels, and in more severely affected areas and communities in each country. The proportion of infants and pre-school children with endemic goitre (by palpation and thyroid volume) and urinary iodine levels in the child population will be the main clinical and biochemical outcome indicators to assess progress in IDD status and programme impact. Process indicators related to iodine concentration (at least 15 parts per million of iodine) through the production, distribution and consumption levels (households) will also be monitored to ensure that USI is achieved.

34. The proportion of children under six with xerophthalmia and serum vitamin A (below 10 mg/100 ml) will be the main outcome indicators to assess progress in combating vitamin A deficiency, while the proportion of children (6-59 months old) and women (with a birth in the last 12 months) who received high doses of vitamin A supplements — in the last six months and before the infant was eight weeks old, respectively — will be the core indicators to monitor programme coverage. On the other hand, anaemia prevalence in infants, pregnant women and women of reproductive age with haemoglobin levels below 10 mg/dl will be monitored periodically to assess progress in reducing iron deficiency anaemia.

35. A variety of means of verification and monitoring mechanisms will be used to constitute, analyse and interpret the above indicators. Outcome indicators will have as main data sources periodic household surveys, community- and district-level surveillance/sentinel sites, and clinical/biochemical tests at health posts and centres at the local level. Sentinel sites will be used to monitor anaemia and the prevalence of iodine deficiency in school-aged children. Routine monitoring for fortification and content of iodine, vitamin A and iron at the production, importation, wholesale and retail levels will be the responsibility of the different government authorities (ministries of Health, Agriculture, Trade or the National Standard Office).

36. To strengthen programme decision-making, cost-efficiency and guaranteed quality of services, an internal monitoring mechanism will be established at national, regional and local levels. Subregional oversight and annual programme reviews will be part of monitoring and evaluation activities.

Programme management

37. Government institutions identified by the participating countries in the previous multi-country micronutrient programme will be the major implementing partners in the respective countries. At the country level, these institutions will ensure government commitments to follow up and apply the legal framework that supports food fortification, supplementation and epidemiological surveillance. They will also ensure the provision of the required financial and human resources. NGOs involved in the fight against micronutrient deficiencies in the countries will be involved in programme implementation and monitoring.

38. Building on the accumulative experience in implementation of the multi-country programme, the UNICEF Subregional Coordination Unit will be maintained to ensure the management and monitoring of implementation of the proposed programme, with the support of UNICEF office focal point in each country. In addition, the Unit will provide orientation, channel technical assistance to the

countries, ensure resource mobilization, organize technical meetings, and arrange training and annual review meetings with programme partners to assess progress in the implementation of the annual plan of action and prepare the plan for next year. The Unit will continue to serve as a reference centre for the participating countries and donors as well. The Subregional Coordinating Unit, jointly with government counterparts, will organize the more comprehensive mid-term review in 2004 that will also be attended by other collaborating partners. A technical advisory committee composed of representatives of PAHO/WHO, ICCIDD and the Micronutrient Initiative will be established to oversee and provide technical support and guidance to the programme.